

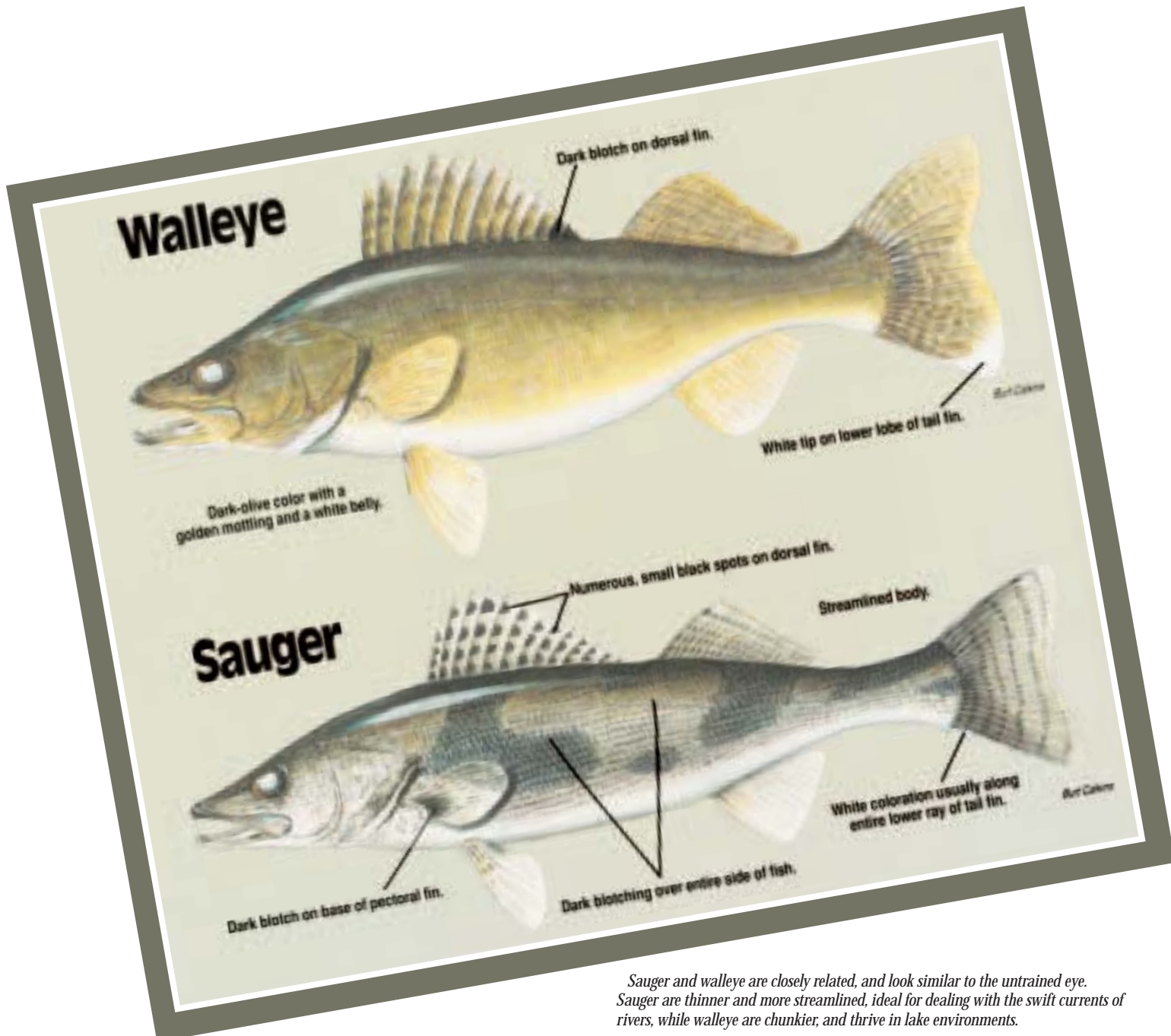
NORTH DAKOTA'S Sauger Saga

By Dave Fryda

Sauger were once an abundant game fish in the stretch of Missouri River that winds its way through North Dakota.

Sauger thrived in the Missouri's warm, turbid waters, traveling long distances in search of prime locations to spawn, feed, and spend the winter. Like most native Missouri River fish, the ability to travel unimpeded up and down the river was critical since important habitats were often far apart.

The closure of Garrison Dam in 1953 and Oahe Dam in 1962 altered the Missouri River's habitat. The turbid, warm-water habitats in which sauger evolved were largely eliminated and replaced with large, clear-water reservoirs connected by remnant stretches of river. Once homogenous, the state's sauger are now isolated in Lake Sakakawea and Lake Oahe populations. The Sakakawea population resides upstream of Garrison Dam, including the Missouri and Yellowstone rivers, while the Oahe population inhabits the North Dakota portion of Lake Oahe, as well as the Garrison Reach of the Missouri River, from Garrison Dam downstream about 80 miles to the headwaters of Oahe.



Sauger and walleye are closely related, and look similar to the untrained eye. Sauger are thinner and more streamlined, ideal for dealing with the swift currents of rivers, while walleye are chunkier, and thrive in lake environments.

While Lake Sakakawea sauger have fared relatively well over the last 50 years, the Lake Oahe population has not been as fortunate.

A sauger is not just a skinny walleye. Although sauger and walleye are closely-related, and look similar to the untrained eye, their behavior and habitat needs vary considerably. Sauger are thinner and more streamlined, part of their evolution to deal with swift currents of large, turbid rivers. The chunkier walleye thrive in lake environments.

Although both species are often found in the same waters, environmental conditions often mean one species has a distinct advantage over the other. For example, walleye can spawn in both river and lake habitats, but successful sauger reproduction almost exclusively depends on access to river habitat. This difference may explain why Sakakawea sauger have remained healthy while the Oahe population has faltered.

To gain an understanding of the Missouri River System's sauger fishery today, it is important to look at the history of each population. Fortunately, North Dakota Game and Fish Department biologists began collecting long-term population data on Oahe and Sakakawea in 1966 and 1959, respectively. In addition, information from creel surveys and other studies added to our knowledge of sauger history.

Lake Oahe

Following closure of Garrison Dam, a substantial sauger fishery developed in the Tailrace. Creel surveys showed sauger routinely accounted for more than 50 percent of fish harvested annually during the 1950s and early 1960s. However, this fishery was relatively short-lived and the sauger population collapsed by the late 1960s.

This collapse was not unique to the Garrison Reach as similar boom-and-bust fisheries developed below other Missouri River dams during the dam-building period of the last century. After closure of each dam, sauger and other highly migratory species such as paddlefish, stacked up below the dams during their annual migrations and were vulnerable to anglers. In the long term, however, loss of access to suitable spawning habitat meant few young fish added to the population. As a result, angler harvest and natural mortality ultimately diminished the sauger fishery below Garrison Dam.

Following the Tailrace fishery crash in the 1960s, Lake Oahe's sauger population remained low until the late 1980s and 1990s. While the fishery never recovered to a point anywhere near the early post-dam era, creel surveys during 1990 showed that anglers harvested about 10,000 sauger, or about 10 percent of all fish caught from Lake Oahe and the Missouri River below Garrison Dam. The sauger population then declined during the 1990s, and by 2000 the annual harvest fell to less than 1,000 fish, or less than 1 percent of all fish harvested.

Although sauger abundance and angler harvest have declined since the heyday of the '80s, the fishery in Sakakawea remains a viable resource for anglers.

With closure of Garrison Dam, river habitat once favored by sauger was lost. Cold, clear flows released from the dam often warm too late in summer for sauger and other species to successfully spawn. In addition, river entrenchment and daily water level changes – sometimes up to four feet – has reduced backwater connections, contributing to lower river productivity.

As a result, natural reproduction is limited and few young sauger are sampled by Department biologists during annual surveys of the Missouri River and upper Lake Oahe. Although some reproduction may occur in North Dakota tributaries like the Knife and Cannonball rivers, suitable spawning habitat is lacking and most sauger reproduction in the Lake Oahe population likely occurs in major tributaries such as the Grand, Moreau, and Cheyenne rivers in South Dakota.

While Lake Oahe sauger will likely continue to fluctuate, lack of suitable habitat and limited reproduction means the population will continue to exist at a relatively low level. The long-term persistence of sauger in Lake Oahe, however, is not a concern and they will likely continue to provide a viable fishery during peaks in abundance.

Lake Sakakawea

Strike up a conversation with almost any group of Lake Sakakawea anglers – and once debate over water management, fishing access, and future of the coldwater fishery subsides – the conversation almost always turns to the best places and techniques for catching walleye and salmon.

Perhaps a few may even wander into the finer points of chucking smelt for early spring pike, but it's a pretty safe bet that sauger won't be a major discussion point.

Lake Sakakawea is by far the best sauger fishery in North Dakota, but since the closure of Garrison Dam, sauger have taken a roller coaster ride in the last 50 years.

Fortunately, upper Lake Sakakawea, and the Yellowstone and Missouri rivers above the reservoir, still harbor enough natural river characteristics that sauger need to successfully reproduce. Within Lake

Sakakawea, sauger abundance is generally highest in the upper, more river-like reservoir reaches.

Habitat conditions in the Yellowstone River influence the abundance of both adult and juvenile sauger in Lake Sakakawea. High spring flows appear to cue spawning movements out of Sakakawea, and annual abundance of young-of-year sauger depends on flow conditions in the river. Although adult sauger in spawning condition are often found in lower portions of the reservoir, successful reproduction is doubtful as few young sauger are sampled below the Little Missouri River Arm.

Adult sauger abundance in Lake Sakakawea during summer surveys also depends on flow conditions into the Yellowstone. Sakakawea sauger numbers are typically higher during years when river levels are low. Unlike walleye, abundance and spawning success of Sakakawea sauger depends more on habitat conditions above the reservoir than water levels and forage abundance in the reservoir. This difference largely explains why sauger and walleye have not followed similar trends over Sakakawea's 50-year history.

When Garrison Dam closed, water levels gradually increased until Lake Sakakawea reached full pool in 1967. As the reservoir filled, sauger numbers steadily declined until reaching an all-time low in 1974. Walleye populations, on the other hand, steadily increased as the turbid river environment was replaced by clearer lake habitat.

Sauger populations began to grow again

in the mid-1970s, before really taking off in the mid-1980s to reach an all-time high in 1986. Although sauger numbers initially began to increase following the introduction of smelt in 1971, the dramatic rise during the mid-1980s more likely reflects changing conditions above the reservoir rather than actual population trends. Because annual flows into the Yellowstone River were decreasing rapidly at that time, the number of sauger found in the Yellowstone River also dramatically decreased. Instead, the fish moved downstream into Sakakawea.

Regardless of the root of the sauger explosion in Lake Sakakawea, anglers quickly capitalized, harvesting nearly 60,000 sauger by 1988. Sauger accounted for nearly 30 percent of the game fish harvest and became especially important to Sakakawea's fishery as drought and a decline in smelt greatly trimmed walleye numbers. As a result, the mid-1980s to the early 1990s became the heyday of Lake Sakakawea's sauger fishery, setting the standard by which the fishery is often compared.

As the drought intensified in the late 1980s and early 1990s, netting surveys began to show that sauger populations were declining. The decline was not surprising, considering the sauger population during the 1980s was dominated by large fish, and natural reproduction during the late 1970s and early 1980s was poor. As a result, few

young fish were available to replace fish caught or lost to natural mortality. However, good reproduction during much of the 1990s stabilized the population at a healthy level.

While the sauger population remains healthy, it has been overshadowed by the walleye fishery. Beginning in 1991, walleye numbers began to increase dramatically and for several years remained at, or near, record highs. Anglers, not surprisingly, abandoned the sauger fishery and concentrated on the more abundant walleye. In 2000, for example, anglers harvested only about 5,000 sauger, for 1 percent of overall sport fish harvest.

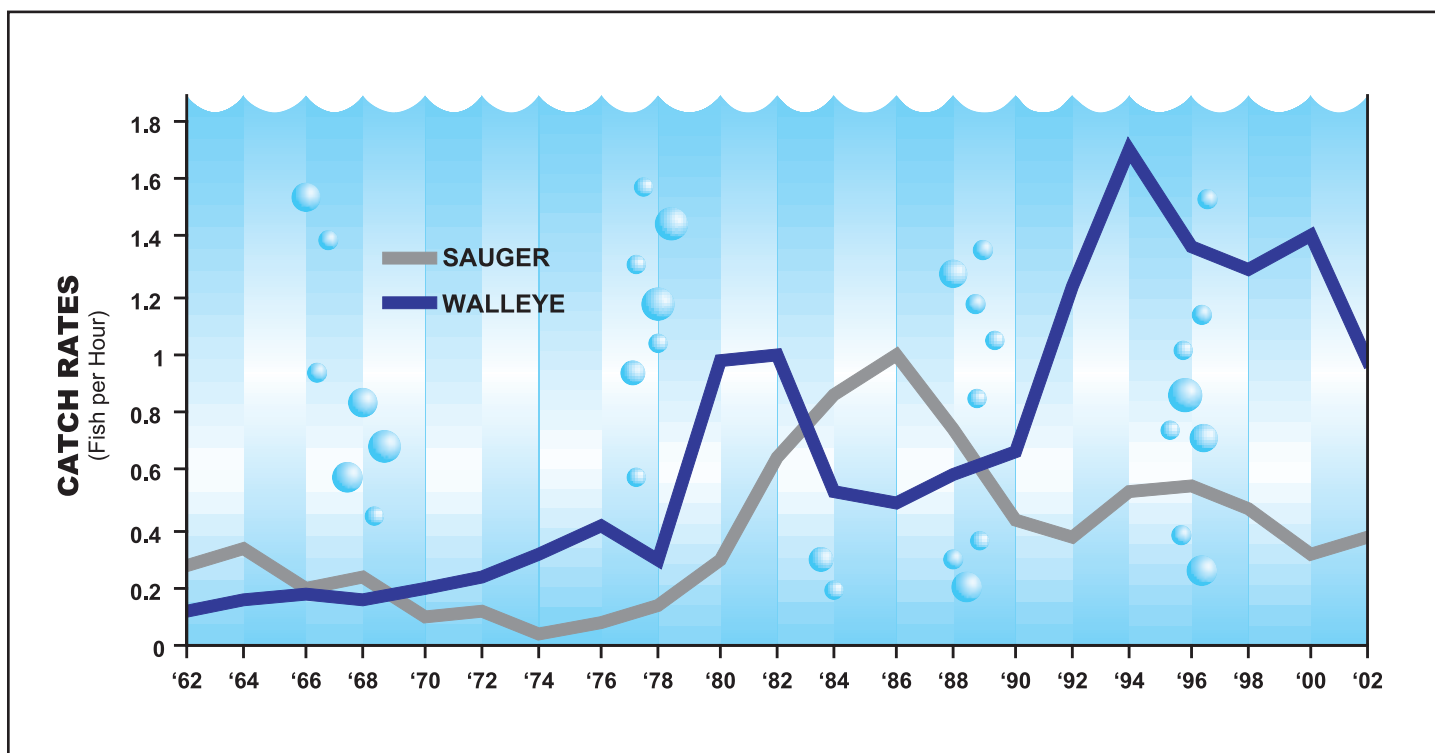
Although sauger abundance and angler harvest have declined since the heyday of the '80s, the fishery in Sakakawea remains a viable resource for anglers. In the last decade, the population has stabilized at a moderate level and periodic good reproduction indicates the river habitat above Lake Sakakawea is still capable of supporting good reproduction when adequate flow conditions exist.

To keep Sakakawea's sauger population viable, it is critical the remaining river habitat above the reservoir retains as much natural integrity as possible. Although the Yellowstone River still has a fairly natural flow, numerous diversions and lowhead

CATCH AND HARVEST OF SAUGER IN LAKE SAKAKAWEA 1988-2000

Year	Effort (angler hours)	Catch	Harvest	Pounds Harvested	Mean Length (inches)	Percent of total harvest
1988	996,456	88,830	59,739	102,918	17.5	29
1991	645,791	47,011	33,791	57,952	17.7	14
1994	1,017,227	37,401	17,782	24,932	17.6	10
1997	1,099,061	11,482	5,511	8,952	17.0	2
2000	1,374,737	9,309	5,124	7,091	16.9	1

CATCH RATES OF SAUGER AND WALLEYE, LAKE SAKAKAWEA, 1963-2002



dams impede sauger migration and may hinder spawning success. Present and future demands on the water resources of the Yellowstone can have a negative influence on Sakakawea's sauger population. Water allocations in the Yellowstone must be closely scrutinized to ensure that adequate flows are maintained.

Sauger have played an important role in the fishing history of Sakakawea, and the hope is they will continue to do so for some time.

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Craig Bhrle